

IN THE APPLICATION

OF

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FOR

Portable Flushing Apparatus for Motor Vehicles

FILED WITH

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Date of Deposit 04 August 2003
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BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates generally to portable washing apparatus and, more specifically, to a portable spraying apparatus for motor vehicles whereby the exterior, especially the undercarriage is sprayed with a fluid for the removal of debris that may contain organic matter, such as noxious weeds.

While motor vehicles have revolutionized society by providing the means for traveling great distances in a short period of time, it has also introduced unforeseen hazards. One of these hazards is addressed by the present invention, the introduction of invasive plants that are harmful to a native ecosystem. These plants spread by seeds that are carried by water, animals and human transportation systems and once established are difficult, if not impossible to eradicate and if left unchecked damage an ecosystem, such as national forests.

The present invention provides means whereby vehicles, especially forestry service vehicles, can be subjected to a vigorous spray of water along the undercarriage and tires to remove mud and seeds. When these vehicles are used in infested areas, the present invention can be assembled to wash the vehicles and thereby severely reduce the potential of carrying noxious weeds to other area. In the preferred embodiment, the use is primarily

targeted at the spread of noxious weed but is not limited to such, as it may be determined that flushing the undercarriages of vehicles produces other advantages. By adding detergent or insecticide to the water may reduce the spread of certain insects.

Description of the Prior Art

There is other spraying device designed for undercarriages. Typical of these is U.S. Patent No. 2,749,180 issued to Andrews on June 5, 1956.

Another patent was issued to Braunger on May 30, 1967 as U.S. Patent No. 3,321,793. Yet another U.S. Patent No. 3,795,254 was issued to Blosser on March 5, 1974 and still yet another was issued on December 2, 1975 to Lancaster as U.S. Patent No. 3,923,658.

Another patent was issued to Allen, et al. on September 18, 1979 as U.S. Patent No. 4,168,231. Yet another U.S. Patent No. 4,889,147 was issued to Chandler on December 26, 1989. Another was issued to Chayer on July 9, 1991 as U.S. Patent No. 5,029,758 and still yet another was issued on September 17, 1996 to Van Der Est as U.S. Patent No. 5,556,535.

Another patent was issued to Kaipainen on June 1, 1999 as U.S. Patent No. 5,908,550 and still yet another was issued on January 29, 2003 to Payne as U.K. Patent No. GB 2 377 879.

U.S. Patent Number 2,749,180

Inventor: Alvadore M. Andrews

Issued: June 5, 1956

In the manufacture of a sprinkling hose of the class described, the steps comprising perforating a flat, elongate strip of thin flexible plastic along two narrow longitudinally extending areas of the strip, one spaced on each of the opposite sides of the longitudinal center line of said strip, and thereafter cementing each of the longitudinal marginal edge portions of the strip to longitudinally extending portions of the strip closely adjacent said longitudinal center line and between said areas to form a pair of parallel fluid conduits each having apertures in the wall thereof for the escape of fluid.

U.S. Patent Number 3,321,793

Inventor: Anthony J. Braunger

Issued: May 30, 1967

A device for steam cleaning and de-icing the lower portions of automobiles comprising a horizontally positioned grille structure adapted to receive an automobile thereon, a plurality of steam jets positioned beneath said grille structure for ejecting steam onto the lower portions of said automobile, steam pipes communicating to said jets, a valve member for releasing steam to said jets, a plate positioned above said grille structure and attached to said valve member for releasing said steam to said jets when the weight of a portion of an automobile rests upon said plate, certain of said jets being positioned outwardly, and being adapted to provide steam jets passing angularly upwardly and inwardly, a further plurality of jets being positioned inwardly and being further adapted to impinge upon certain lower portions of said automobile.

U.S. Patent Number 3,795,254

Inventor: Nelson K. Blosser

Issued: March 5, 1974

A device for spraying water against a vehicle to remove harmful salt and chemicals deposited on the vehicle during use. A plurality of parallel spaced conduits rest on a surface beneath the vehicle and extend longitudinally therewith. The conduits are connected to a water header which in turn is connected to a supply of water. A pair of these conduits are located along the outer sides of the vehicle and a plurality of these conduits are located underneath the vehicle between the front and rear wheels. A plurality of spray holes are formed in the upper portions of the outer conduits at various angles for spraying water against the sides of the vehicle at various heights. A plurality of spray holes are formed in the upper portions of the inner conduits at various angles for spraying water in various directions against the underside portions of the vehicle.

U.S. Patent Number 3,923,658

Inventor: Peter John Lancaster

Issued: December 2, 1975

A vehicle washing plant fitted with a water recycling circuit providing water for a washing cycle and a rinsing cycle and including a main filter containing a granulated filter medium, preferably activated carbon, and a back-wash filter, the circuit being connected to supply water for the rinsing cycle firstly through the backwash filter and subsequently through the main filter with preferably water for the washing cycle passing through the back-wash filter only; two preferred types of main filter are described which comprise a plurality of filter receptacles connected in series within a common casing at least one of the receptacles being easily replaceable.

U.S. Patent Number 4,168,231

Inventor: Mark K. Allen

Issued: September 18, 1979

A pump supplies water from a clarifier tank to a centrifugal separator, where solid particles are removed, and then to wash spray heads. A return or bypass conduit with a pressure-operated, modulating one-way valve permits water to pass from the outlet of the separator to the inlet of the pump in sufficient volume to ensure that the separator will operate at high velocity even when there is little or no demand for processed water at the spray heads as well as to recycle centrifuged water to further clean it. A float tank is coupled to and extends from the return conduit for enabling any trapped air to be expelled from the system. In addition, an air-bleeding conduit with a one-way check valve therein is placed in parallel with the return conduit to permit air flow in the direction opposite to that allowed by the valve therein to enable air to be removed from the system, especially when the pump is primed by supply of additional water thereto.

U.S. Patent Number 4,889,147

Inventor: David A. Chandler

Issued: December 26, 1989

A portable car wash apparatus that includes an upright U-shaped piping system partially circumscribing a car travel space. Water spray jets are located at various points along the piping system, such that when a car is driven through the circumscribed space jets of water are sprayed onto the car surface. The apparatus will clean the roof and side areas of the vehicle, as well as the underbody areas that are relatively inaccessible.

U.S. Patent Number 5,029,758

Inventor: Steven A. Chayer

Issued: July 9, 1991

A portable car wash system that uses water efficiently to wash cars in a parking lot is provided. A push cart is mounted on wheels and contains a water supply tank, an engine, and low- and high-pressure pumps. The engine drives the pumps. The low-pressure pump pumps water out of the tank and the high-pressure pump boosts the pressure of the water. The high-pressure water is delivered to a wand via a hose attached to a hose reel. The wand includes a positionable head that can be aimed to direct a high-pressure spray from a nozzle to the car being washed. A spray shield reduces overspray from the nozzle. A locking member holds the head in a desired position. A washing tool having a sponge and cover is used by an operator to hand wash the car. A soap injection system injects soap into the water by conventional venturi action when selected by the operator. The system is small enough to not disrupt traffic in the parking lot, can be used to wash a parked car without spraying adjacent cars, and uses only four to six gallons of water to wash a car.

U.S. Patent Number 5,556,535

Inventor: N. Ver Der Est

Issued: September 17, 1996

The invention relates to a method for the purification of a polluted liquid, especially a washing liquid used at a washing installation, by sucking the polluted liquid and leading it through at least one filter and next leading back the liquid purified thus to a take-off point, whereby the liquid flow carried through the filter is maintained at a substantially constant level. The invention further relates to an apparatus for carrying out the method comprising a suction line connected to a source of polluted liquid, a discharge line for the purified liquid debouching at a take-off point, at least one filter unit positioned between the suction line and the discharge line, a pump connected therewith in series and a device for limiting the amount of liquid flowing across the filter unit positioned in series with the filter unit. The described method and apparatus allow large savings on the amount of washing liquid required for operating a washing installation and lead to considerably decreased environmental damage.

U.S. Patent Number 5,908,550

Inventor: Pasi Kaipainen

Issued: June 1, 1999

A water reclamation system for a vehicle wash system that provides water that is purified to enable reclaimed water to be used in a positive displacement pump. The reclamation system provides for continuous flow of water through the vehicle wash settling pit with an aerator to oxygenate the water and prevent odors typically produced by stagnant water from wash system settling pits. The water reclamation system is operable to clean the carwash system settling pit except for the primary pit in which the debris accumulated from the secondary settling pit is deposited.

U.K. Patent Number GB 2 377 879

Inventor: Francis Dicker Payne et al.

Issued: January 29, 2003

An apparatus for facilitating the cleaning and disinfecting of the underside and/or suspension of a vehicle comprises an array of upwardly directed nozzles, positioned transversely of a carriageway, means for supplying a disinfectant fluid to the nozzles and means for sensing the completion of the passage of the vehicle over the nozzles thereby terminating the supply of disinfectant solution. The sensing means may either be in the form of light sensors or pressure transducers. There is preferably a means for reducing the speed of the vehicle as it passes over the nozzles, this may be in the form of a double ramp. The apparatus maybe independent of electricity and/or water or it maybe connected to the mains supply.

While these spraying apparatus may be suitable for the purposes for which they were designed, they would not be as suitable for the purposes of the present invention, as hereinafter described.

SUMMARY OF THE PRESENT INVENTION

The present invention discloses a portable spraying apparatus for motor vehicles comprised of a source of water, e.g., a water tank, a pump for pressurizing the water, and conduit having a plurality of outlet apertures therein positioned substantially horizontal to said undercarriage. The conduit is positioned parallel to the vehicle having elements positioned adjacent the vehicle for cleaning the exterior sides and wheel wells while spaced apart conduit is positioned under the vehicle to produce a vigorous spray at the undercarriage. Also disclosed are a high pressure hose, high pressure water supply coupling, a pair of outside tube sections, a pair of risers, multiple unions, a pair of ramps, an arrow showing vehicle direction, a manifold and storage rack. The portable spraying apparatus for motor vehicles has spaced apart conduit positioned under the vehicle to produce a vigorous spray at the undercarriage. The conduit is positioned parallel to the vehicle having conduit positioned adjacent the vehicle with risers for cleaning the exterior sides and wheel wells and under the vehicle with multiple apertures positioned to deliver a spray from 90 to 30 degrees relative to the horizontal. Positioned within the conduit and forming an integral part therewith is at least one connective member having threaded distal ends whereby rotation of one member relative to another can occur to compensate for uneven ground.

A primary object of the present invention is to provide a portable system for the flushing of motor vehicle undercarriages and wheel wells.

Another object of the present invention is to provide means for removing debris from the tires, wheel wells and undercarriage of a motor vehicle such as mud, seeds and pollen.

Yet another object of the present invention is to provide a portable flushing system for motor vehicles that is easily assembled.

Still yet another object of the present invention is to provide a portable flushing system for motor vehicles having a source of fluid for flushing said vehicles.

A further object of the present invention is to provide a portable flushing system for motor vehicles having means for pressurizing said fluid prior to flushing said vehicles.

A yet further object of the present invention is to provide a portable flushing system for motor vehicles having conduit for delivering said pressurized fluid to the wheel wells and undercarriage of said vehicles.

A still yet further object of the present invention is to provide a portable flushing system for motor vehicles wherein said conduit has a plurality of apertures for directing the pressurized fluid against the undercarriage of said motor vehicles.

Another object of the present invention is to provide a portable flushing system for motor vehicles wherein said apertures are slotted to fan the spray.

Yet another object of the present invention is to provide a portable flushing system for motor vehicles wherein said apertures are deployed to provide a spray between 90 and 30 degrees relative to the horizontal.

Still yet another object of the present invention is to provide a portable flushing system for motor vehicles wherein the vehicles can drive over the conduits as the spraying occurs.

A further object of the present invention is to provide a portable flushing system for motor vehicles wherein said conduits are spaced apart and positioned parallel with said vehicle undercarriage.

A yet further object of the present invention is to provide a portable flushing system for motor vehicles wherein said spaced apart conduits reside under said vehicle and adjacent said vehicle whereby the vehicle undercarriage and wheel wells are sprayed simultaneously.

A still yet further object of the present invention is to provide a portable flushing system for motor vehicles wherein said undercarriage conduit is comprised of spaced apart

parallel conduits.

Another object of the present invention is to provide a portable flushing system for motor vehicles wherein said conduit remain substantially parallel to said undercarriage during the spraying.

Yet another object of the present invention is to provide an articulated connection member whereby the flushing system compensates for uneven ground.

Still yet another object of the present invention is to provide a portable flushing system for motor vehicles wherein said conduit can incorporate somewhat vertical elements for delivering a spray for high body vehicles.

An additional object of the present invention is to provide a portable flushing system for motor vehicles wherein said fluid is water.

Another object of the present invention is to provide a portable flushing system wherein said water can contain detergent, pesticides, herbicides or other additives.

Yet another object of the present invention is to provide a portable flushing system wherein said system provides means for applying a liquefied substance to a motor vehicle.

Still yet another object of the present invention is to provide a portable flushing system wherein said fluid is contained within a portable tank.

A further object of the present invention is to provide a portable flushing system for motor vehicles wherein said fluid is contained within a truck.

A yet further object of the present invention is to provide a portable flushing system for motor vehicles wherein said system provides means for collecting the spent spray.

A still yet further object of the present invention is to provide a portable flushing system for motor vehicles wherein said spent spray is recycled for reuse.

Another object of the present invention is to provide a portable flushing system for motor vehicles wherein said recycled spray is filtered prior to reuse.

Yet another object of the present invention is to provide a portable flushing system for motor vehicles wherein said recycling system constitutes a closed system.

Still yet another object of the present invention is to provide a portable flushing system for motor vehicles wherein said closed system removes the potential of introducing unwanted elements into the environment by containing said elements within the filtering elements.

A further object of the present invention is to provide a portable flushing system for motor vehicles wherein said filtering is comprised of three separate filters.

A yet further object of the present invention is to provide a portable flushing system for motor vehicles wherein said filtering is comprised of a centrifugal filter, strainer, and wound cartridge.

Additional objects of the present invention will appear as the description proceeds.

The present invention overcomes the shortcomings of the prior art by providing a portable spraying apparatus for a motor vehicle's wheels and undercarriage comprised of a source of water, a pump for pressurizing said water, and conduit having a plurality of apertures positioned substantially horizontal to said undercarriage. The conduit is positioned parallel to said vehicle having elements positioned adjacent the vehicle for cleaning the exterior sides and wheel wells while spaced apart conduit is positioned under the vehicle to produce a vigorous spray at the undercarriage. Additionally, the conduit has at least one centrally positioned member having threaded distal ends forming an articulated element whereby the device will lay flat on uneven ground.

The foregoing and other objects and advantages will appear from the description to follow. In the description reference is made to the accompanying drawings, which form a part hereof, and in which is shown by way of illustration specific embodiments in which the invention may be practiced. These embodiments will be described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other embodiments may be utilized and that structural changes may be made without departing from the scope of the invention. In the accompanying drawings, like reference characters designate the same or similar parts throughout the several views.

The following detailed description is, therefore, not to be taken in a limiting sense, and the scope of the present invention is best defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be more fully understood, it will now be described, by way of example, with reference to the accompanying drawings in which:

Figure 1 is an illustrative view of the present invention.

Figure 2 is an illustrative view of prior art.

Figure 3 is an illustrative view of the present invention.

Figure 4 is a perspective view of the present invention in use.

Figure 5 is an exploded view of the present invention.

Figure 6 is a cross sectional view of the spray orifice.

Figure 7 is a cross sectional view of the riser.

Figure 8 is A block diagram of the method of the present invention.

Figure 9 is an illustrative view of the present invention.

Figure 10 is an illustrative view of an additional element of the present invention.

LIST OF REFERENCE NUMERALS

With regard to reference numerals used, the following numbering is used throughout the drawings.

- 10 present invention
- 12 vehicle
- 14 hose
- 16 water tank
- 18 pump
- 20 conduit
- 22 high pressure hose
- 24 high pressure coupling
- 26 outside tube sections
- 28 center tube sections
- 29 cross connector
- 30 risers
- 32 union
- 33 rotatable joint
- 34 ramps
- 36 direction arrow
- 38 manifold
- 40 storage rack

- 42 spray
- 44 undercarriage
- 46 exterior side
- 48 wheel well
- 50 apertures
- 52 supply tank
- 54 holding tank
- 56 containment vessel
- 58 supply tank pump
- 60 holding tank pump
- 62 filter system
- 64 stage 1 filter
- 66 stage 2 filter
- 68 stage 3 filter
- 70 sump pump

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The following discussion describes in detail one embodiment of the invention (and several variations of that embodiment). This discussion should not be construed, however, as limiting the invention to those particular embodiments since practitioners skilled in the art will recognize numerous other embodiments as well. For a definition of the complete scope of the invention, the reader is directed to appended claims.

Turning to Figure 1, shown therein is an illustrative view of the present invention

10. The present invention 10 provides a system for flushing the undercarriage of a vehicle
12. More importantly the present invention 10 prevents the transportation of noxious weed seeds to residential, agricultural and areas with natural vegetation such as forests and grassland. Lodged in the crevices of tire treads, stuck on spring coils or chassis frame noxious weed seeds can spread and germinate in as little time as a week. The spread of noxious weeds causes soil erosion, degenerates water sheds, displaces valuable riparian vegetation and negatively affects fisheries by changing the nature and composition of stream banks.

Turning to Figure 2, shown therein is an illustrative view of the prior art. The only way presently to remove noxious weeds and other debris from vehicles is to spray them with a handheld hose 14. This method clearly lacks the thoroughness that can be provided

by an apparatus such as the present invention wherein the vehicle 12 can pass over as the undercarriage is vigorously sprayed.

Turning to Figure 3, shown therein is an illustrative view of the present invention 10. The present invention 10 provides a portable spraying apparatus for motor vehicles comprised of a source of water, e.g., a water tank 16, a pump 18 for pressurizing the water, and conduit 20 having a plurality of outlet apertures therein positioned substantially horizontal to the undercarriage. The conduit 20 is positioned parallel to the vehicle having riser elements 30 positioned adjacent the vehicle for cleaning the exterior sides and wheel wells while spaced apart conduit is positioned under the vehicle to produce a vigorous spray at the undercarriage. The spraying apparatus has a left and a right side that are substantially similar with a perpendicular threaded cross connective member 29 having a manifold 38 disposed in its middle with multiple threaded connecting members which can be independently manipulated whereby the device will lay flat on uneven ground. Shown are a high pressure hose 22, high pressure water supply coupling 24, a pair of outside tube sections 26, a pair of center tube sections 28, a pair of risers 30, multiple unions 32, a pair of ramps 34, an arrow 36 showing vehicle direction, a manifold 38 and storage rack 40.

Turning to Figure 4, shown therein is a perspective view of the present invention 10 in use. Shown is the portable spraying apparatus for motor vehicles 12 having spaced apart conduit 20 positioned under the vehicle to produce a vigorous spray 42 at the undercarriage 44. The conduit 20 is positioned parallel to the vehicle 12 having outside sections 26 of

conduit connected by cross connectors 29 positioned adjacent the vehicle with risers 30 for cleaning the exterior sides 46 and wheel wells 48 and under the vehicle with multiple apertures 50 positioned to deliver a spray 42 from 90 to 30 degrees relative to the horizontal. Positioned within the conduit 20 and forming an integral part therewith is at least one connective manifold member 38 having threaded members whereby rotation of one member relative to another can occur to compensate for uneven ground.

Turning to Figure 5, shown therein is an exploded view of the present invention 10. Shown is an exploded view of the multiple pieces of conduit 20 of the portable spraying apparatus for motor vehicles. The conduit 20 is assembled with unions 32 whereby the vehicle travels over the ramps 34 traveling parallel to the conduit which has element positioned adjacent the exterior side and spaced apart conduit on the underside. Risers 30 with rotatable joints 33 on the exterior side provide means for washing the exterior and wheel wells of the vehicle. Also shown are manifold 38 with multiple threaded unions 32 and rotatable unions or joints 33 which can be turned in all directions along with cross connections 29.

Turning to Figure 6, shown therein is a cross sectional view of the spray orifice 50. Shown is a sectional view of one of the apertures or orifices 50 within the conduit 20 piece having a slot-like configuration which will cause the fluid spray 42 to fan thereby covering the complete undercarriage. Arrow 36 shows the water supply flow.

Turning to Figure 7, shown therein is a cross sectional view of the riser 30. Shown is a cross section view of the riser 30 having at least one aperture 50 providing a fan-like spray 42 for the sides and wheel wells of the vehicle. The riser 30 size can vary depending on the size of the vehicle being sprayed. Additionally, risers 30 can be placed on the interior conduits again depending on the type of vehicle being sprayed. Arrow 36 shows the water supply flow.

Turning to Figure 8, shown therein is a block diagram of the method of the present invention. The present invention provides means for quickly flushing the sides, tires and undercarriage of a vehicle having a pressurized fluid source and conduit for delivering the fluid to the vehicle. The method of the present invention includes the following steps: 1) transport washer to site; 2) locate and assemble device; 3) connect fluid supply to device; 4) stage vehicles and equipment for cleaning; 5) turn on fluid supply; 6) start pump; 7) vehicles and equipment pass over spray device; 8) turn pump off; 9) disconnect fluid supply; 10) disconnect fluid supply from spray device; 11) disassemble spray device; and 12) ready device for transport.

Turning to Figure 9, shown therein is an illustrative view of the present invention 10. As illustrated the present invention 10 is portable comprising a source of fluid 16, a pump 18 for pressurizing the fluid, and a modular assembly of conduit 20 placed on storage rack 40 having a plurality of apertures positioned substantially horizontal to the vehicle undercarriage. The conduit 20 is assembled and connected to the fluid source 16

where it will be parallel to the vehicle having elements positioned adjacent the vehicle for cleaning the exterior sides and wheel wells while spaced apart conduit is under the vehicle to produce a vigorous spray at the undercarriage.

Turning to Figure 10, shown therein is an illustrative view of an additional element of the present invention 10. Additional elements of the present invention 10 would provide a portable recirculating closed system connected by conduit 20 whereby vehicles could be washed at any location without leaving any of the seeds or debris behind. The portable supply tank 52, the holding tank 54 and portable containment vessel 56 would be fabricated from a polymeric material that could be folded and stowed for portability. As the fluid is dispensed against the vehicle it would be contained in vessel 56 and placed in a holding tank 54 to be pumped at 58, 60 through filter system 62 before being dispensed again. Pump 58 is for the supply tank and pump 60 is for the holding tank. The filter system 62 may have a stage 1 centrifugal filter 64, a stage 2 strainer 66, and a stage 3 wound cartridge filter 68. A sump pump 70 is also shown.